

MEYER (A.)

Statistics of Five Hundred Cases
of Lobar Pneumonia.

Notes on Some Interesting Results
with the Widal Test.

A Case of Pernicious Anæmia with
Fatty Heart Occurring During Pregnancy.

BY

ALFRED MEYER, M.D.

ATTENDING PHYSICIAN TO MOUNT SINAI HOSPITAL, NEW YORK; VISITING PHYSICIAN
TO BEDFORD SANITARIUM FOR CONSUMPTIVES, BEDFORD STATION, N. Y.

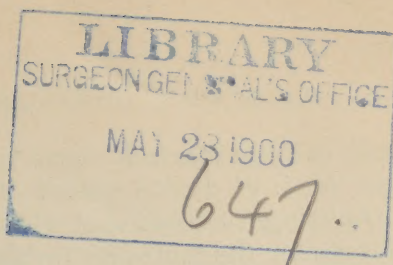
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STATISTICS OF FIVE HUNDRED CASES OF LOBAR PNEUMONIA.

BY ALFRED MEYER, M.D.,
ATTENDING PHYSICIAN.

THE following statistics of 500 lobar pneumonias are culled from all the cases of the primary type that have occurred in the medical service of Mount Sinai Hospital during the ten years ending January 1, 1898. The medical service includes 2 adult male wards of about 44 beds, 1 adult female ward of about 24 beds, and a children's ward of about 26 beds. The children's service includes both sexes up to the age of 14 years.

TABLE I.
CASES TREATED. DIED.

Age.	Male.	Female.	Total.	Male.	Female.	Total.	Percentage.
4-12 months....	6	7	13	4	5	9	69.34
1-5 years.....	22	25	47	3	7	10	21.27
6-10 "	23	15	38	0	3	3	7.89
11-20 "	77	27	104	7	4	11	10.57
21-30 "	90	36	126	5	5	10	7.93
31-40 "	64	20	84	15	2	17	20.23
41-50 "	36	16	52	12	7	19	36.53
51-60 "	22	5	27	9	2	11	37.03
61-70 "	6	0	6	3	0	3	50.00
71-80 "	2	1	3	0	1	1	33.33
Total.....	348	152	500	58	36	94	18.88

Total cases, 500.

Total deaths, 94.

Mortality of series, 18.88 per cent.

Youngest case in series, 4 months (died).

Oldest " " " 77 years (recovered).

Twenty-three cases died within forty hours after admission. Excluding these, the mortality for series is 14.20 per cent.

A study of this table indicates a rather favorable mortality per cent: 94 deaths out of 500 cases = 18.88 per cent. Omitting 23 cases that died within forty hours after admission, the mortality for the series is only 14.20 per cent. Pye-Smith reports a mortality of 25.5 per cent out of 434 cases. Now, as it is well known that for a number of reasons hospital statistics are apt to be unfavorable as compared to those drawn from private practice, our own results, taken exclusively from hospital records, are comparatively more favorable than the figures indicate. As the cases cover a period of ten years, there is less probability of the introduction of certain chance elements that might influence the mortality during a particular year. Aufrecht reaches the conclusion, after a careful study of mortality for sixteen years, and after excluding all variations due to locality, season, individuality, and therapeutics, that the varying mortality (his own figures, 6.6-25.3 per cent) is dependent upon the varying virulence of the pneumococcus.¹ How large a rôle in the reduction of our own mortality is played by the fact that our patients do not belong to the drinking class I shall leave undetermined.

Mortality according to Age.—A further study of this table shows (last column) a very high mortality under 12 months (9 out of 13 cases = 69.34 per cent), an almost uninterrupted fall in the mortality up to 30 years of age, and then a rise for every decade up to 70 years, which latter gives a mortality of 50 per cent. The mortality is nearly three times greater between 31 and 40 than it is between 21 and 30, and nearly twice as great between 41 and 50 as it is between 31 and 40. All authors agree as to the influence of age on mortality, though their figures vary.

Morbidity according to Sex.—Of the 500 cases, 348 were males and 152 were females—i.e., 69.6 per cent and 30.4 per cent respectively. The difference is mainly due to cases occurring after 10 years of age, and is greater than

¹ I refer to this question again in Table IX.

can be accounted for by the disproportion in the size of the male and female services, which is about 2 to 1. Our result agrees with the general verdict that men are more liable to pneumonia than women. Aufrecht seems to think it still uncertain whether sex plays any rôle in the causation of pneumonia, but presents figures which seem to indicate a prevalence three and one-half times greater among men than women.

Mortality according to Sex.—There were 36 deaths out of 152 female cases=23.68 per cent; there were 58 deaths out of 348 male cases=16.66 per cent—a proportion that agrees almost exactly with that given by Juergensen in Ziemssen's "Encyclopædia," who says that "pneumonia is, *cæteris paribus*, a more dangerous affection in the female than in the male sex in the ratio of 3 to 2."

TABLE II. (a)

CRISES.

Day.	Male.	Female	Total.
5th	6	5	11
6th	2	3	5
7th	42	11	53
8th	18	3	21
9th	29	5	34
10th	13	6	19
11th	11	3	14
12th	4	3	7
13th	2	2	4
2 weeks	2	4	6
2½ "	14	3	17
3 "	4	1	5
4 "	4	0	4
Total	151	49	200

TABLE II. (b)

LYSES.

No of days.	No of cases.
9 days....	1
10 "	3
12 "	3
13 "	3
2 weeks...	4
2½ "	19
3 "	12
4 "	11
5 "	1
6 "	3
7 "	2
8 "	1
Total	63

Showing average duration
of pyrexia.

Out of 263 cases there were 63 lysés and 200 crises.

Of 200 crises, 79 fell on even days, 121 on odd days.

In this table all cases are considered as having deferred by crisis in which the temperature fell from 103° or over to normal within forty-eight hours. This may

appear as an arbitrary classification, but I believe it has at least this to recommend it, that it is a compromise between the twenty-four-hour limit allowed by some and the seventy-two hour limit allowed by others. Out of 263 cases with complete histories, there were 200 crises—that is, a little more than 75 per cent of the cases. Aufrecht gives a smaller percentage, 57.5 per cent out of 1,501 cases.

The proportion on the even and odd days respectively was:

Even days.....	39.5
Odd “	60.5

Juergensen's figures are:

Even days.....	38.7
Odd “	61.3

The closeness of the two sets of figures is striking.

The Average Duration, estimated from the beginning of the disease to the cessation of fever, was:

For 200 crisis cases, 10 days.

“ 63 lysis	“ 22	“
“ 263	“ 13	“

The most frequent duration was about a week—125 cases ended between the fifth and ninth days inclusive = 47.53 per cent.

TABLE III.
SITE.

Lobe.		RIGHT LUNG.										LEFT LUNG.										Total both lungs.			
		Right upper.		Right lower.		Right middle.		Entire right lung.		Right bilobar.		Total right lung.		Left upper.		Left lower.		Entire left lung.		Involved lungs.			Total left lung.		Male and female.
		M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.		M.	F.	
4-12 mos	1	1	0	0	0	0	0	0	0	0	0	1	3	2	4	0	0	0	0	1	0	1	1	46	
1-5 yrs	2	2	4	4	0	1	2	0	0	0	0	7	8	1	4	2	3	5	2	4	1	0	9	76	
6-10 "	2	0	3	1	0	1	0	0	0	0	6	1	2	2	4	4	1	1	0	1	0	1	7	3	
11-20 "	6	1	12	5	0	0	6	2	5	1	29	9	2	0	11	4	7	0	6	0	0	20	4	51	
21-30 "	8	3	14	5	0	1	13	2	4	1	39	12	6	3	18	5	9	5	11	4	33	13	24		
31-40 "	7	3	5	8	2	0	6	1	6	2	26	14	5	4	19	4	9	1	9	5	33	9	36		
41-50 "	3	1	8	2	0	0	6	2	2	1	19	6	3	0	11	6	2	1	5	4	16	7	102		
51-60 "	3	1	3	1	0	0	5	0	1	0	12	2	1	7	1	0	0	4	1	0	1	8	2	45	
61-70 "	0	0	1	0	0	0	1	0	1	0	3	0	0	0	1	0	0	0	1	0	1	0	1	383	
71-80 "	2	0	0	0	0	0	1	0	0	0	3	0	0	0	1	0	0	0	0	0	1	0	1	58	
Total. . .	34	12	50	26	2	1	40	11	19	5	145	55	22	14	76	26	31	14	39	19	129	54	325		

In this series of 383 sites, the frequency of occurrence and percentages (including the cases which had pneumonic processes in both lungs) of the more common sites, is as follows:

Left lower lobe, 102 cases, 26.62 per cent.
 Right " " 76 " 19.84 "
 Entire right lung, 51 " 13.31 "
 " left " 46 " 12.01 "
 Total right lung, 52.21 per cent.
 " left " 47.78 "
 Total cases involving both lungs, 15.14 "

This table requires but little comment. The figures agree with those of other authors in that they show a more frequent involvement of the right lung than of the left; the difference is somewhat less than the one usually observed, perhaps because the bilateral cases are included in the calculation. The left lower lobe was the most frequent seat of disease, occurring in 26.62 per cent of the cases. This also agrees with experience gained

elsewhere. Pye-Smith gives the following figures in his 434 cases: left base, 151; right base, 140.

TABLE IV.
SITE IN RELATION TO MORTALITY.

Lobe.	RIGHT LUNG.										LEFT LUNG.											
	Right upper.		Right lower.		Right middle.		Entire right lung.		Right bilobar.		Total right lung.		Left upper.		Left lower.		Entire left lung.		Involving both lungs.		Total left lung.	
	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.	M.	F.
4-10 mos.	0	1	0	0	0	0	0	1	0	0	2	0	0	0	0	0	0	1	0	0	0	1
1-5 yrs.	0	0	1	2	0	0	0	1	0	0	2	2	0	0	0	0	0	2	0	0	0	2
6-10 "	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	1
11-20 "	0	0	0	0	0	0	1	1	0	0	2	1	0	0	1	0	0	0	0	0	0	1
21-30 "	0	0	0	0	0	1	0	0	0	1	2	0	0	1	0	0	1	2	2	1	2	2
31-40 "	0	0	1	0	0	0	2	0	1	0	4	2	0	0	3	0	0	0	2	2	3	0
41-50 "	1	0	2	0	0	0	0	2	0	0	4	2	0	0	2	0	0	0	3	0	2	0
51-60 "	2	0	0	0	0	0	1	0	0	0	3	0	0	0	2	0	0	0	0	2	0	0
61-70 "	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0
71-80 "	0	0	0	0	0	0	1	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0
Total.	3	1	6	2	0	1	8	4	1	1	18	9	0	0	7	2	1	5	11	5	8	7
Both sexes	4	8	12	1	1	12	12	27	2	27	27	27	0	9	9	6	16	15	16	15	15	15
Mortality..	8.69%	10.52%	33.33%	33.33%	33.33%	23.54%	8.33%	18.50%	8.33%	18.50%	18.50%	18.50%	0.0%	8.82%	13.33%	27.58%	8.18%	8.18%	27.58%	8.18%	8.18%	8.18%

Pneumonias involving the right lung were more fatal than those involving the left, in the proportion of 13.50 to 8.18. Aufrecht also finds a difference, though his disproportion is not so great—15.3 per cent for right side and 12.8 per cent for left side. It is a striking fact that we have no fatal case of left upper pneumonia to report, though there were 36 cases in this site out of 325 cases (see Table II.). This does not support Juergensen's view that the prognosis is better when a lower lobe is involved.

TABLE V. (a)
HIGHEST TEMPERATURE, PULSE, AND RESPIRATION WITH RECOVERY IN A SERIES OF 183 CASES.

Temperature.....	37-97	98-98.9	99-99.9	100-100.9	101-101.9	102-102.9	103-103.9	104-104.9	105-105.9	106-106.9	107-107.9	108-108.9	Total,
Number of cases...	0	6	3	8	8	22	30	66	32	7	1	0	183
Pulse.....	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150-159	160-169	170-179	Total,
Number of cases...	0	1	7	11	36	36	50	21	19	1	1	0	183
Respiration.....	20-23	24-27	28-31	32-35	36-39	40-43	44-47	48-51	52-55	56-59	60-70	80-100	Total,
Number of cases...	2	10	18	22	31	37	18	19	13	2	7	4	183

TABLE V. (b).
HIGHEST TEMPERATURE, PULSE, AND RESPIRATION IN A SERIES OF 38 DEATHS.

Temperature.....	97-97.9	98-98.9	99-99.9	100-100.9	101-101.9	102-102.9	103-103.9	104-104.9	105-105.9	106-106.9	107-107.9	108-108.9	Total,
Number of cases...	1	0	1	0	0	3	4	15	7	3	2	2	38
Pulse.....	60-69	70-79	80-89	90-99	100-109	110-119	120-129	130-139	140-149	150-159	160-169	170-179	Total,
Number of cases...	0	0	0	2	1	5	3	5	9	7	4	2	38
Respiration.....	20-23	24-27	28-31	32-35	36-39	40-43	44-47	48-51	52-55	56-59	60-70	80-100	Total,
Number of cases...	0	2	0	3	1	6	6	9	0	1	9	1	38

These tables give a general idea of the type of case we had to deal with in 183 recoveries and 38 deaths, at least so far as a record of pulse, temperature, and respiration can do so. The data do not include cases under 14

years of age, because of their less intimate relation in children to the type of disease.

In 183 cases of recovery, 40 had temperature of 105° and over—about 22 per cent.

In 183 cases of recovery, 92 had pulse of 120 and over—about 50 per cent.

In 183 cases of recovery, 100 had respiration of 40 and over—about 54 per cent.

By a study of Tables V. (a) and V. (b) we see that out of a total of 122 cases in which pulse ran to 120 or over, there were 92 recoveries to 30 deaths—in other words, a little less than 25 per cent of deaths. This result is more favorable than that of Griesinger (quoted by Juergensen), who, from a study of 72 cases, inferred that 33½ per cent of the patients die under these circumstances; but Juergensen objects to a generalization from so small a number of cases. There was similarly a death rate of about 26 per cent in which the temperature ran to 105° or over (14 out of 54), and a death rate of about 30 per cent in cases in which the respiration ran to 48 or over (20 out of 65). The following details of the tables are of interest: 8 recoveries with temperature of 106° and over, 4 recoveries with respiration between 80 and 100.

TABLE VI. (a)

TABULATION OF THE MORE FREQUENT COMPLICATIONS OCCURRING IN THE WHOLE SERIES OF 500 CASES.

Complication.	No. of cases.	Sex.		Cured.	Died.	Frequency in percentage.
		M.	F.			
Pulmonary œdema	29	21	8	3	26	5.80
Pleurisy with effusion	25	14	11	20	5	5.00
Empyema	18	12	6	12	6	3.60
General bronchitis.....	11	8	3	8	3	2.20
Acute conjunctivitis.....	5	5	0	5	0	1.00
Pericarditis with effusion..	7	5	2	5	2	1.40
Acute endocarditis.....	5	3	2	4	1	1.00
Acute nephritis.....	5	1	4	3	2	1.00
Acute endocarditis and pericarditis with effusion.....	4	3	1	1	3	0.80
Pleuritis sicca.....	2	2	0	2	0	0.40
Colitis.....	5	2	3	2	3	1.00

Statistics from various cities show some differences with regard to frequency of various complications, though some of the differences may be accidental. In our own cases pulmonary oedema was both the most frequent and the most fatal complication, occurring in 5.8 per cent of the cases, and of these nearly 90 per cent ended fatally. Pleurisy with effusion comes a close second with a frequency of 5 per cent. Effusion statistics from other sources vary from 4 to 15 per cent. Aufrecht gives 5.5 per cent in 1,501 cases. He includes, however, the empyemas. If we add our own empyema figures to those of effusion we get a somewhat larger number, 8.6 per cent. Pericarditis occurred 11 times (4 with endocarditis)—2.2 per cent. Of these, 5 died—nearly one-half. In 1 of the 5 cases of conjunctivitis the purulent discharge was examined microscopically and the presence of pneumococci demonstrated. There were 4 cases of colitis. There has been some conflict of opinion regarding the relation of colitis to pneumonia. Some experiences with the Widal reaction in the past two years excite a suspicion that this type of case may belong to the masked typhoids, in the recognition of which in the future the Widal reaction will play a prominent rôle.

The small number of acute nephritis cases I am inclined to attribute to imperfections in the records as well as to the rigid exclusion of the simple albuminuria of fever.

TABLE VI. (b)

TABLE OF JAUNDICE CASES WITH REFERENCE TO SITE AND MORTALITY.

	Site of pneumonic process.	Cured.	Died.
1	Right upper lobe.....	0	1
2	" lung entire.....	0	1
3	" upper lobe.....	0	1
4	" and left base.....	1	0
5	" lung entire.....	1	0
6	" lower lobe	0	1
7	" lung entire.....	0	1

Total number of jaundice cases in series of 325 cases.

In view of the many discussions regarding the nature and classification of cases complicated by jaundice, I have arranged them in a separate table. There were 7 cases out of 325 (2.15 per cent). In Vienna and Stockholm there were 53 cases out of 8,354 (0.62 per cent). Pye-Smith gives 4 cases out of 434 (0.9 per cent).

Aufrecht found 15 cases out of 1,501 (1 per cent). In Basle it was observed 65 times in 230 cases (28.3 per cent), which unusual frequency does not seem to be entirely explained by Juergensen's theory that the jaundice had been looked for more carefully.

Of Aufrecht's 15 cases 2 ended fatally (1 complicated with chronic nephritis), which is no more than his average mortality. In cases complicated by jaundice not due to obstruction, and which he believes are due to other infection than the diplococcus pneumoniae, he believes the prognosis is much worse. It is an interesting fact that the right lung was involved in every one of our 7 cases and that in 3 of them the entire right lung was affected. Pye-Smith's 4 cases were also right-sided. Our mortality was high in these cases, 5 out of 7.

TABLE VII.

NUMBER OF CASES AND DEATHS, WITH PERCENTAGES OF EACH, OCCURRING IN THE DIFFERENT SEASONS, IN THE ENTIRE SERIES.

Season.	No. of cases.	Percentage of cases.	No. of deaths.	Percentage of deaths.
Spring—March, April, and May..	167	33.40	29	30.85
Summer—June, July, and August.	83	16.60	8	8.51
Autumn—September, October, and November..	92	18.40	20	21.27
Winter—December, January, and February....	158	31.60	37	29.26
	500	100.00	94	

In this table the largest morbidity is shown in the winter and spring months, 65 per cent, and only 35 per cent for the summer and autumn. Aufrecht, from a

study of 1,501 cases, gives for the first half of the year 66.9 per cent and for the second half 32.9 per cent of the cases. As was to be expected from the greater morbidity, the total mortality is also greater in the winter and spring than in the autumn and summer, our percentages being respectively 70.21 per cent and 29.79 per cent. Juergensen gives as a result of a study of the mortality tables in six large European cities 66.2 per cent for the winter and spring and 33.8 per cent for summer and autumn.

Our summer cases appear to have been more benign than those of other seasons, for, though they represent 16.60 per cent of the morbidity, they give only 8.51 per cent of the deaths.

TABLE VIII.

SHOWING THE FREQUENCY OF OCCURRENCE OF PREVIOUS ATTACKS OF ACUTE LOBAR PNEUMONIA IN A SERIES OF 325 CASES.

No. of cases, 30	Cured, 27	Died, 3
Frequency in per cent, 9%	Total cases in series, 325	Mortality, 10%

If Juergensen's view were true that "one attack probably increases the disposition to a recurrence," it would seem to me there would be a larger number of cases with previous attacks than our table shows—30 out of 325 (9 per cent). Pye-Smith gives 18 recurrences in 434 cases, which is a still smaller percentage (4.1 per cent). Aufrecht believes in a congenital predisposition, and quotes Ziemssen, who found recurrences 19 times among 201 pneumonic children; 14 had 2 attacks, 3 had 3 attacks, and 2 had 4 attacks. The believers in a specific causation of pneumonia may find some satisfaction in the fact that the percentage of deaths (10 per cent) in the recurrences is materially less than the mortality of all the cases (18.8 per cent). The recurrences, in other words, appear to be of a milder type, as is not infrequently the case with typhoids.

TABLE IX.

SHOWING NUMBER OF CASES AND DEATHS EACH YEAR IN THE ENTIRE
SERIES OF 500 CASES.

Year.	No. of cases.	No. of deaths.	Mortality
1888	15	5	29.41%
1889	40	8	20.00%
1890	30	7	23.33%
1891	68	7	10.29%
1892	40	6	15.00%
1893	79	19	24.05%
1894	62	8	12.80%
1895	69	19	27.53%
1896	48	11	22.9 %
1897	47	4	8.51%
Total.	500	94	18.80%

This table is interesting as showing a mortality varying between wide limits in different years—8.51 per cent in 1897 and 29.41 per cent in 1888. Aufrecht's extremes (already referred to in Table I.) are 6.6 per cent and 25.3 per cent. These changes in mortality rate, so striking at Mount Sinai Hospital as elsewhere, are continually urged as a confirmation of their view by those who believe in a "status epidemicus" or in the varying virulence of the pneumococcus.

Treatment.—With reference to the treatment it may be said that there has been no single method in vogue at Mount Sinai. Stimulants, both alcoholic and medicinal (digitalis, sparteine, strychnine), have entered more largely as a factor than any other; for out of 284 cases stimulants were used in 250, either alone or combined with other measures (in 85 cases cold compresses on chest, tepid sponging, and, rarely, plunges). In 89 cases antipyretics were used, either alone or combined with stimulants and hydrotherapy.

It is extremely difficult to draw conclusions as to the influence of treatment on the result—first, because the treatment was rarely limited to a single active procedure; second, because of the varying severity of the disease.

Neither Petresco's method of using very large doses of digitalis, nor Aufrecht's of employing hypodermatic injections of muriate of quinine, has been used sufficiently to permit of any deductions.

The question of venesection in the treatment of pneumonia is still a mooted one. Some condemn it utterly, and Aufrecht thinks it has been positively proven that pericarditis is more frequent in cases thus treated. Others, again, like Pye-Smith, urge that it should not be forgotten or neglected, and believe venesection suitable at the commencement of the disease, or during its course "to relieve the overpressure in the right side of the heart and the systemic veins." In our own cases we have records of only four patients in whom venesection was practised; three of these died and one recovered. In none of them is there any mention of pericarditis. They were all severe cases; the area involved was extensive, and the three fatal ones were complicated by an acute nephritis. In other words, the prognosis was unfavorable irrespective of the treatment.

NOTES ON SOME INTERESTING RESULTS WITH THE WIDAL TEST.

By ALFRED MEYER, M.D.,

ATTENDING PHYSICIAN.

IN view of the complaint in various quarters that the Widal reaction appears so late, in doubtful cases, as to be of little practical value in the very type in which it is most needed, the following cases, though few in number, may not be without interest. They are all cases that have been observed within a year on my own service, with the exception of the case of Benjamin K., for which I am indebted to Dr. M. Manges, on whose service it occurred. Only brief extracts from the histories will be given.

1. *Abortive Typhoid*.—Dina K., admitted December 22, 1897, æt. 26 years. Sick one week, last four days in bed; headache, lassitude, anorexia, nausea, no epistaxis, bowels regular, well nourished, tongue slightly dry. Physical examination: Heart, lungs, and spleen negative; a few erythematous spots on abdomen. Temperature on admission 99.6° , pulse 96, respiration 24. She had with her a report from the Board of Health that the Widal reaction was positive. Temperature, afternoon, 103.2° . December 24, temperature range 100.6° to 101.8° ; tongue moist and clean; all evidence as bearing on a probable typhoid negative. December 26, temperature touched normal, did not go above 100° ; Widal positive. December 28: Convalescence may be said to have commenced from this day; tongue moist and clean; no clinical evidence of illness; no roseola nor headache; feels perfectly well; Widal positive. Widal tests made daily to January 2, inclusive, were positive. January 4, soft diet. Discharged January 16, cured.

Here is a woman in whom convalescence was practically established in ten days or less after taking to bed; whose temperature touched normal on the fourth day after admission to the hospital; in whose case there was scarcely a symptom outside of the fever, headache, and anorexia; and in whom in former years the indefinite diagnosis of febricula would have been made, or possibly a suspicion of typhoid entertained, or the case might have been relegated to the class of intestinal toxæmias.

2. *Irregular Typhoid*.—Henry T., æt. 44, clerk, admitted September 27, 1898. Illness began about a month ago. Nothing ails him but sleeplessness, and can ascribe no reason for this trouble. Has no headache; talks peculiarly; says he was the "beauty of the family"; has had no mental worries, except the care of an aged mother; appetite fair, bowels regular; has lost flesh and strength. House physician noted slight ptosis of left eyelid, and tongue deviates to right side; occasional tremor of right side of face and of tongue, and tremor of voice while speaking; speech hesitating, and tendency to repeat; some indistinctness of enunciation; marked *tâche cérébrale*; patellar tendon reflexes markedly exaggerated. Temperature 101.8°, pulse 126, respiration 30. Physical examination: Chest and abdomen negative. In the evening, temperature normal; for the next three days, temperature ranged between 99° and 100.6°. October 1, temperature 100° to 101°; 2, 100° to 103°; 3, 100° to 102.4°; 4, 99° to 102°; 5, 99° to 103°; 6, 99° to 102.4°; 7, 99.2° to 101.2°. Partial Widal reaction. Has been having one movement of bowels daily, either by enema or spontaneously. October 8, 99.6° to 103.6°; positive Widal; no symptoms, subjective or objective, of any kind outside of fever; no headache, no muscular pains; tongue moist and clean; no roseola, no spleen, no diarrhoea, no tympanites. October 9, 101° to 102.4°; Widal positive, but less marked. From this date to October 25 these slight variations of temperature continued; otherwise patient was perfectly well. Daily inquiries elicited the reply that he was "first rate," that he had nothing to complain of except that he received nothing to eat. From October 26 to the date of discharge on November 9 his temperature remained normal.

Here the prominence of the nervous symptoms (sleeplessness for a month before admission, motor disturbances of face and tongue, exaggerated reflexes, etc.), with the almost complete absence of fever at the time of admission, did not even excite the suspicion of typhoid fever. As it was, the Widal test, taken in a routine way, disclosed the true state of affairs, and the patient convalesced after the fever had continued exactly four weeks.

3. *Typhoid Obscured by Pneumonia*.—Benjamin K., æt. 44, presser, admitted February 26, 1898. Owing to patient's poor mental condition and refusal to answer questions, history imperfect. Illness of eight days' standing. Began with a chill, followed by fever, cough, difficult expectoration, and pain in chest. General condition fair; fairly well nourished. Tongue dry and brown. Lungs: anteriorly, negative. Posteriorly at left base a dull note, crepitant and subcrepitant râles. All other organs negative. Slight general tenderness of abdomen. On admission, pulse 102, respiration 36, temperature 100.2°. February 27, temperature, afternoon, 105°; urine 22 ounces, 1020, albumin; trace of bile, few pus cells. Ehrlich positive. Next day albumin increased to 0.4, many casts present; urine involuntary in part. March 1, chill of ten minutes' duration this morning; temperature above 104° all day; physical signs unchanged. Widal positive. Treatment with plunges begun. With the exception of delirium, his condition continues about the same until March 4, when the pulse begins to intermit. In spite of rectal and hypodermatic stimulation, he died early on March 5.

Until the Widal reaction was obtained on the third day after admission, it would scarcely have been justifiable to make a diagnosis of typhoid; the pulmonary signs were prominent, and the fever, mental and renal conditions could very reasonably be explained as secondary to the pulmonary trouble, perhaps more reasonably than by a typhoid only in its tenth day. And yet the result of the Widal was decisively the other way.

4. *Typhoid Obscured by Pneumonia*.—Esther L., æt. 29, housewife, admitted October 15, 1898. Has been in bed two weeks with a cold. Prominent symptoms were fever, cough, pain on both sides of chest, and severe dyspnoea. No chills. Cough, fever, and dyspnoea persist. Great prostration and weakness. Eight days ago a crop of boils appeared on the body and right hip. Bowels regular. On admission temperature 102.2° , pulse 118, respiration 48; lips pale bluish; skin moist, showing a diffuse maculo-papular eruption with acne and furuncles. Spleen enlarged (?). Lung: anteriorly, resonance on right side ceases at fourth rib, dull note in right axillary line; also a few crepitant râles in both axillæ. Posteriorly: dull note below right midscapula and at left base; fine crepitant râles and diminished voice and breathing over right side; crepitant and subcrepitant râles over left base. Treated as a typhoid suspect.

First day had three stools. October 16, temperature 101° to 102.8° , respiration 40 to 48, pulse 108 to 118, Widal negative. The next four days general condition about the same, stools slightly more frequent (from 5 to 8 daily). Widal still negative. October 21, temperature 99.8° to 103.8° ; October 22, temperature 99.2° to 103.6° . Partial Widal for the first time. This partial Widal continued daily with normal morning temperatures and slight evening rises until the 27th, when the Widal reaction was positive and continued so for several days. October 30, herpes labialis. Discharged cured November 11, 1898.

In this case it is true the Widal reaction did not appear until late (the twenty-second day); still it was not too late to be of material service in making the diagnosis of typhoid a certainty. In the ante-Widal days, the sudden commencement, the prominence of chest symptoms, the early dropping of the temperature to normal, and even the appearance of herpes labialis, would all have rendered the diagnosis of a primary pulmonary complaint justifiable. The long duration of the disease and the diarrhoea might have helped to confirm our suspicion of a typhoid even without the Widal, though the uncer-

tainty would not have been entirely removed without the bacteriological test, in view of the occasional occurrence of severe diarrhoea with pneumonia.

5. *Ambulant Typhoid*. — Adolph K., æt. 19 years, shoemaker, admitted October 16, 1898. Was a volunteer soldier at Camp Black during August; had slight diarrhoea there. Afterward went to Camp Meade. Illness began there about six weeks ago. Was in hospital at Camp Meade one week during September, with malaise and fever, though he did not take to bed. Was treated for malaria, with quinine. Has lost twelve pounds during last three months. No definite complaint at time of admission. Looks pale and poorly nourished. Temperature 99.6°. Spleen enlarged and easily felt. Widal positive, Ehrlich negative. October 20, spleen still palpable. Widal positive on October 21 and 23, though gradually less marked. October 27, Widal negative. Discharged November 10.

Here is a patient who was proven by the Widal test to have been an ambulant case of typhoid through the entire disease. He was already in the apyretic stage when he reached the hospital, and was then merely suffering from malnutrition. The military diagnosis of malaria would very likely have been concurred in, had it not been for the bacteriological evidence. That the infection was recent was shown by the gradual disappearance of the reaction while the patient was under observation.

Regarding the technique employed in the Widal reaction in these cases, I would refer to the report of the pathologist and assistant pathologist of the institution.

A CASE OF PERNICIOUS ANÆMIA WITH FATTY HEART OCCURRING DURING PREGNANCY.

BY ALFRED MEYER, M.D.,

ATTENDING PHYSICIAN.

MRS. SARAH W., æt. 37 years, admitted January 28, 1898.

Family History.—Negative.

Previous History.—Has always enjoyed good health, no illness of any kind, in particular no inflammatory rheumatism or chorea. Has had four children, the last one eight years ago; is now pregnant over four months.

Present History.—Illness of about two and one-half months' standing, beginning with weakness and increasing pallor, and dyspnœa on the slightest exertion. There then followed swelling of the feet, slight headache and cough, increased on lying down. Appetite poor, bowels constipated. Also began to have sweats. During the past two weeks pallor, cough, sweats, œdema, dyspnœa, and weakness have become much worse, confining patient to bed. Passes her urine frequently. Chief complaints: great weakness and dyspnœa on slightest exertion.

General Condition.—Good panniculus adiposus, but intense anæmia; conjunctivæ perfectly white; mucous membranes very pale and resembling those of a patient dying of hemorrhage; no cyanosis; general anasarca.

Lungs.—Slightly diminished resonance at both bases, in part due to œdema of soft parts. Coarse and fine râles diffused over chest. *Heart.*—On the right, dulness extends about one finger's breadth beyond right border of sternum; large mammæ and œdema make this somewhat uncertain. Systolic murmurs heard over all the orifices and over the entire precordial region. The apical murmur audible to a point midway between apex and axillary line. Basic sounds not accentuated.

Auscultation difficult on account of the great dyspnoea. *Liver*—Left lobe apparently enlarged and extending a good four fingers' breadth beyond free border of ribs. Palpation hindered somewhat by the abdominal distension. *Spleen*—Enlarged to percussion and distinctly palpable beyond the free border of the ribs. *Abdomen*—Enlarged and contains free fluid. *Uterus*—Enlarged and extends more than half way to umbilicus. Marked œdema of feet, legs, and hands. On admission, pulse 100, respiration 48, temperature 100°. *Urine*, first specimen—Cloudy, acid, 1019, no albumin, no sugar, abundant urates, a few blood cells, uric acid crystals, no casts.

January 28 (first day): Temperature range, 100° to 103°; pulse range, 100 to 120; respiration range, 48 to 56. January 29: Temperature range, 102° to 103.4°; pulse range, 120 to 132; respiration range, 48 to 56; urine, 54+ ounces; two stools. Blood: hæmoglobin 20 per cent; no leucocytosis. January 30: Temperature range, 102.4° to 103.6°; pulse range, 120 to 132; respiration range, 54 to 60. Urine, 37+ ounces; morning specimen: 1009, negative, urea four grains to the ounce; twenty-four hours' specimen: 1019 negative, urea eight grains to the ounce. Blood count shows: red blood cells, 1,090,000 to cubic millimetre. Reaction of perspiration on chest, forehead, and hands is decidedly acid; saliva ditto. A drop of blood, however, does not redden litmus paper. Ophthalmic examination by Dr. Gruening on this date shows the presence of neuroretinitis and of extensive hemorrhagic patches in both eyes. January 31: Temperature, pulse, and respiration, as well as general condition, practically unchanged. Urine: total, 51+ ounces, 1016, negative, a few blood cells and epithelia, uric acid crystals. February 1 and 2: Urine on latter date, 59+ ounces, acid, 1016, clear, no albumin, indican present, urea nine and a half grains to the ounce. Microscopic examination negative. Marked Ehrlich. February 3: Condition unchanged. Urine, 62 ounces. Urea in twenty-four hours' specimen, nine grains to the ounce. Widal test negative. Canula introduced into outer aspect of each ankle to relieve the excessive œdema. February 4: No change in urine. Blood examination: No increase in number of leucocytes; a few neutrophiles and neutrophile granules; poikilocytes fairly numerous; nucleated red blood cells; micro- and macrocytes. Died at 7:45 P.M.

I append a report of blood examination made for me by Dr. Ewing, of the College of Physicians and Surgeons:

"The blood of Mrs. Sarah W. appears to fall in the class of primary pernicious anæmia on the following grounds: (1) The marked reduction in the number of red cells; (2) the extreme poikilocytosis; (3) the presence of some megalocytes with increase of hæmoglobin, although the chief character of the blood is the reduction of hæmoglobin; (4) the marked reduction in leucocytes; (5) presence of one megaloblast among many normoblasts; (6) the indications of the clinical history that the case was not one of purpura hæmorrhagica, which might prove fatal with blood of very similar morphology."

(Signed) JAMES EWING.

During patient's period of observation of one week sleeplessness was a prominent feature, partly produced by the uninterrupted dyspnœa and partly by coughing. The last few nights were spent entirely in a chair. There was at all times a great deal of sweating, particularly marked upon the face, where the perspiration gathered in beads. At no time was there any diarrhœa; bowels were kept open by enemata. Stools contained nothing that might explain the intense anæmia; in particular, no entozoa were discovered. Rectal and vaginal examinations were negative, excepting, of course, the evidence of pregnancy. The patient was seen on the 30th of January by Dr. Mundé. The existence of pregnancy was confirmed and the propriety of bringing on labor was negatived by him, on account of the danger of profuse and possibly uncontrollable hemorrhage during the third stage, as well as the doubtful utility of such interference in producing a favorable change in the disease. Before she was seen by me she had received infusion digitalis and bitartrate of potash. Afterward the treatment consisted of Fowler's solution, carnogen, stimulants, enemata of defibrinated beef blood (received only one), washing out of bowels with one per cent saline solution by means of a long rectal tube, on the theory of pernicious anæmia being an intestinal toxæmia, or, as Bramwell has suggested, a gastro-intestinal hepatic anæmia.

¹ See Bramwell: "Atlas of Clinical Medicine," vol. iii., p. 128.

The case herewith reported corresponds very closely in its main clinical features to five cases published by Gusserow in 1871,¹ and which have frequently been referred to in the literature of pernicious anæmia and of fatty heart. And still, in spite of the great lapse of time and the many studies in tissue metamorphosis, and great improvements in methods of blood count and examination, this affection still remains as mysterious as ever. Only two years ago Andry, of Lyons, referring to pernicious anæmia in general, wrote in Robin's "*Traité de Thérapeutique Appliquée*": "Nous devons reconnaître que nous sommes encore mal éclairés sur la nature et l'étiologie de l'affection." In an article on the relation of pernicious anæmia to spinal cord disease Dr. Paul Jacob² says: "Weder ist es gelungen das Wesen, die Aetiologie der perniciosen Anämie überhaupt zu ergründen . . ."

An effort has recently been made to associate acute pernicious anæmia, in some cases at least, with traumatism.³ Heretofore this has not been regarded as a possible etiological factor. Strange to say, in both of the quoted cases the injury was left-sided. In my own case there was no history either of injury or of shock.

Unfortunately it was not possible to obtain a post-mortem examination in this case, although every possible effort was made to secure the consent of the relatives. The only other possible diagnosis would be a combination of cardiac disease with a chronic Bright's, but an analysis of the history, symptoms, and course forbids it. The anæmia was probably more intense than is ever seen in any form of chronic renal disease; it was also more sudden in appearance; the specific gravity of the urine was high for the cirrhotic type that might temporarily have shown no albumin;

¹ Arch. f. Gyn., Bd. ii.

² Berl. Klin. Woch., August, 1897.

³ Bret: La Prov. Méd., Lyons, Dec., 1897; and James Herrick, of Chicago, Jour. Amer. Med. Assoc., June, 1896.

albumin and casts were persistently absent in every specimen of urine examined; the daily amounts of urea were large, even for a person on full diet, and, in accordance with this fact, there were neither gastric nor nervous symptoms present to indicate a uræmic condition—not even a vomit, and only slight headache at time of admission; the dyspnœa could easily be explained on the score of the anæmia, the pulmonary congestion, and the fever. The ophthalmic picture might have been present in either primary pernicious anæmia or in the secondary anæmia of Bright's. The microscopic examination of the blood, however, seems to make the diagnosis of pernicious anæmia a certainty.

